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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,683	02/17/2006	Sumi Tanaka	33082M301	2808
441 7590 04/17/2008 SMITH, GAMBRELL & RUSSELL 1130 CONNECTICUT AVENUE, N.W., SUITE 1130 WASHINGTON, DC 20036				
EXAMINER				
KACKAR, RAM N				
ART UNIT		PAPER NUMBER		
1792				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/568,683

**Applicant(s)**

TANAKA ET AL.

**Examiner**

Ram N. Kackar

**Art Unit**

1792

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/31/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6-11 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**1. Claims 1-4, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over to Yoshida (JP 2000021957).**

Yoshida teaches a support column provided at a top end portion thereof with a flanged part, and a substrate holding table joined to the flanged part, wherein: the substrate holding table includes a heating mechanism; the substrate holding table is provided in a lower surface thereof with a U-shaped groove extending along an outer circumferential surface of the flanged part; and an inner circumferential surface of the U-shaped groove is connected to the outer circumferential surface of the flanged parts to form a continuous single plane. (See, for example, Fig. 1).

Yoshida further teaches a second groove on the inner side also since the U shaped groove, in addition to outer circumferential surface could also be on the inner side (English translation Paragraph 9). Yoshida teaches that a large surface area around the junction helps to relieve thermal stress (Paragraphs 9, 20-24). See also fig 6

Yoshida teaches a groove formed in a part of a portion, opposing the flanged part, of the lower surface of the substrate holding table (See, for example, Fig. 4, 6) and the flanged part joined to the lower surface of the substrate holding table at an outermost annular area thereof

Regarding claim 2, Yoshida teaches both an end portion of a profile line of the inner circumferential surface of the U-shaped groove on a side of the flanged part and a profile line of the outer circumferential surface of the flanged part are situated on a single line segment extending in a vertical direction. (See, for example, Fig. 1).

For claim 3, Yoshida teaches the substrate holding structure is made by joining the flanged part and the substrate holding table to each other after forming them individually. (See, for example, Fig. 1).

Regarding claim 8, Yoshida teaches the substrate holding table and the support column are made of ceramics. (See, for example, para. [0017]).

For claim 9, Yoshida teaches a processing vessel connected to an exhaust system, a gas supply system that supplies a process gas into the processing vessel; and the substrate holding structure, as defined in claim 1, arranged in the processing vessel. (See, for example, Fig. 1).

**2. Claims 1-4, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over to Yoshida (JP 2000021957) in view of Nakamura Tsunehiko (JP 2003224044).**

Yoshida teaches a support column provided at a top end portion thereof with a flanged part, and a substrate holding table joined to the flanged part, wherein: the substrate holding table includes a heating mechanism; the substrate holding table is provided in a lower surface thereof with a U-shaped groove extending along an outer circumferential surface of the flanged part; and an inner circumferential surface of the U-shaped groove is connected to the outer circumferential surface of the flanged parts to form a continuous single plane. (See, for example, Fig. 1). Yoshida further teaches a second groove on the inner side also since the U shaped groove, in addition to outer circumferential surface could also be on the inner side (English translation

Paragraph 9). Yoshida teaches that a large surface area around the junction helps to relieve thermal stress (Paragraphs 9, 20-24). See also Fig 6.

Yoshida teaches a groove formed in a part of a portion, opposing the flanged part, of the lower surface of the substrate holding table (See, for example, Fig. 4, 6) and the flanged part joined to the lower surface of the substrate holding table at an outermost annular area thereof.

Further, Nakamura Tsunehiko teaches a similar substrate support and teaches an inner second groove (Fig 6) wherein an inner circumferential surface of the flanged part provides an inclined surface, which is inclined such that an inner diameter of the flanged part successively increases as approaching the lower surface of the substrate holding table. (See, for example, Fig. 6).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a second groove and incline the inner circumferential surface of the flanged part in Yoshida in order to reduce thermal stress on the joining part.

Regarding claim 2, Yoshida teaches both an end portion of a profile line of the inner circumferential surface of the U-shaped groove on a side of the flanged part and a profile line of the outer circumferential surface of the flanged part are situated on a single line segment extending in a vertical direction. (See, for example, Fig. 1).

For claim 3, Yoshida teaches the substrate holding structure is made by joining the flanged part and the substrate holding table to each other after forming them individually. (See, for example, Fig. 1).

Regarding claim 8, Yoshida teaches the substrate holding table and the support column are made of ceramics. (See, for example, para. [0017]).

For claim 9, Yoshida teaches a processing vessel connected to an exhaust system, a gas supply system that supplies a process gas into the processing vessel; and the substrate holding structure, as defined in claim 1, arranged in the processing vessel. (See, for example, Fig. 1).

**3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2000021957) in view of JP 2004-022382 to Goto et al.**

Yoshida does not teach that an inner circumferential surface of the flanged part provides an inclined surface.

Goto teaches that an inner circumferential surface of the flanged part provides an inclined surface, which is inclined such that an inner diameter of the flanged part successively increases as approaching the lower surface of the substrate holding table. (See, for example, Fig. 1).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incline the inner circumferential surface of the flanged part in Yoshida.

The suggestion/motivation would have been to reduce thermal stress. (Goto, Abstract).

**4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2000021957) in view of Watanabe et al (JP 11-354526).**

Yoshida does not teach inner and outer heating-mechanism parts driven by first and second drive power supply system both extending in the support column, respectively.

Watanabe teaches an inner heating-mechanism part 9b and an outer heating-mechanism part 9a formed outside the inner heating-mechanism part; and the inner heating-mechanism part

and the outer heating-mechanism part are driven by first and second drive power supply system both extending in the support column, respectively. (See, for example, Fig. 1, 2).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to divide the heater of Yoshida into inner and outer heating mechanism parts.

The suggestion/motivation would have been to increase temperature control. (Watanabe, Abstract).

**5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2000021957) in view of Watanabe et al (JP 11-354526) as applied to claim 6 and further in view of US 6,215,643 to Nagasaki ("Nagasaki").**

Neither Yoshida nor Watanabe teaches first and second semicircular conductive patterns.

Nagasaki teaches first and second semicircular conductive patterns 4 connected to first and second power supply lines 6; and the first and second conductive patterns substantially cover whole area of the substrate holding table except for gap areas defined between the first conductive pattern and the second conductive pattern. (See, for example, Fig. 1B, 2A).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize semicircular conductive patterns with the teachings of Yoshida and Watanabe

The suggestion/motivation would have been because electrostatic chucks are conventionally employed for holding substrates. (Nagasaki, col. 1, lines 19-26).

None of these references specifically teaches the conductive patterns arranged below the heating mechanism. However, this configuration is merely a rearrangement of parts that is obvious in view of the prior art. See *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

The ability of the conductive pattern to chuck the substrate actually decreases as the distance increases between the top of the holding structure and the conductive pattern. Hence, the placement of the conductive pattern below the mechanism would actually be deleterious and obvious as compared to the configuration in Nagasaki.

Further, these references do not teach the conductive patterns and heating mechanisms connected to the first and second power supply lines. It would have been obvious to do so because this configuration merely integrates the power supply lines that connect to the respective heater mechanisms and conductive patterns.

#### ***Response to Arguments***

Applicant's arguments filed 3/31/2008 have been fully considered and this supplemental office action removes the improperly cited prior art. However all the limitations are taught in the reference of Yoshida it self. Examiner wants to thank the applicant for pointing out the error.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period



will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvaz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ram N Kackar/  
Primary Examiner, Art Unit 1792